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Journal article

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“This is an original manuscript of an article published by Taylor & Francis in Southern Communication on 12th December 2019, available at:

<https://www.tandfonline.com/doi/full/10.1080/1041794X.2019.1704048>”

How Public Health Campaigns Promote Public Health Disparities

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UNCORRECTED PRE-PRINT

To cite this article as published:

Roger Gans (2020): How public health campaigns promote public health disparities, *Southern Communication Journal*, 85(2), 85-96, DOI: 10.1080/1041794X.2019.1704048

Abstract

It is often claimed that interventions aimed at promoting healthy behaviors tend to be most effective among people whose behavior least needs to change and least effective among those most in need of change. If true, the inevitable result would be widening disparities in health engagement between these groups. Using a between-subjects experimental design, this study examined the effects of a directive advocacy message based on the theory of planned behavior (TPB) on groups with different pre-existing levels of engagement in healthy behaviors. The results confirmed that, compared to effects of a non-persuasive control message, the TPB-based message produced greater disparities in engagement between the group lowest in pre-existing health engagement and groups with greater pre-existing levels of engagement. The study suggests well-intended public health initiatives may *seem* to provide a net benefit to society but, in fact, actually contribute to the persistence of the disparities they attempt to address.

Keywords: boomerang effects; health disparities; patient engagement; health engagement; health communication; public health campaigns; theory of planned behavior (TPB)

Article wordcount: 4111 (not including abstract, tables, figures, or references)

How Public Health Campaigns Promote Public Health Disparities

It has been suggested that public communication campaigns intended to address problematic behaviors tend to work best on those who need them least (Dutta-Bergman, 2004; van't Riet & Ruiter, 2011) and often tend to stimulate resistance among those whose behaviors are deemed most in need of change (Ringold, 2002). If this were the case on any sort of wide-scale basis, the results would inevitably serve to increase disparities between these two groups (Dutta-Bergman, 2004, 2005). Faced with concerns about growing societal inequality (Ingraham, 2018; Wike, 2013), it is important for makers of policy and agents of change to be aware that their well-meaning efforts to ameliorate problematic disparities among different segments of the population might in fact be exacerbating those disparities.

The importance of positive engagement with one's personal health is underscored by reports that approximately half of all deaths in the United States "are caused by largely preventable and modifiable behavioral risk factors" (Noar, Benac, & Harris, 2007, p. 673), with health-related lifestyle choices such as smoking, unhealthy diet, and lack of exercise accounting for more than 70% of preventable deaths (Noar et al., 2007). Highlighting the persistence of disparities between society's "have's" and "have-not's," a disproportionate share of these preventable deaths occur among low socioeconomic status groups (Dutta-Bergman, 2005).

The current study tests the possibility that efforts to address issues of problematic disengagement with healthy behaviors—efforts that are often intended to ameliorate conditions for the most at-risk, underserved, and disenfranchised segments of society—may actually serve to sustain or even exacerbate disparities in engagement in healthy behaviors.

The elusive ideal of health engagement

The consensus view of health engagement among scholars and public health advocates seems to center around a difficult-to-achieve ideal of competent, informed, active participation in healthy behaviors (Carman et al., 2013; Clancy, 2011; Dentzer, 2013; Hibbard, Greene, & Overton, 2013). Often used interchangeably with health engagement, *patient engagement* (Hibbard et al., 2013) is widely seen as a solution to many of the longstanding problems with the delivery of quality health care (Dentzer, 2013), and has been referred to as “the blockbuster drug of the century” (Koh, Brach, Harris, & Parchman, 2013, p. 357).

That the delivery of quality health care is considered fraught with longstanding problems and in need of a blockbuster drug underscores the difficulty of successfully achieving the ideal of patient engagement. Failures to heed recommended lifestyle guidelines and treatment plans cause epidemic-levels of unnecessary illness and premature death (e.g., Cramer, Benedict, Muszbek, Keskinaslan, & Khan, 2008; Noar et al., 2007; Ramanadhan & Viswanath, 2006).

The misleading success of health engagement advocacy

When it comes to society-wide performance of healthy behaviors and avoidance of unhealthy ones, the continuing stream of public health interventions and pro-social public communication campaigns is a testament to the persistence of the gap between the ideal and the reality for large portions of the population. Taken as a whole, public health campaigns generally *seem* to produce positive results. In a summary-review of meta-analyses, Snyder (2007) reported finding an average positive effect size of 5%; in other words, “if 60% of people were doing the target behavior before the campaign, about 65% can be predicted to do the health behavior after the campaign” (p. S33). The positive results from such campaigns are far from stunning, however. In this

hypothetical example, of the 40% of the population who had *not* been performing the target behavior before the campaign, 87.5% (i.e., 35% of the total population) would *still* have not been performing it after.

Furthermore, it is not safe to assume “at least no harm done” among the populations who fail to respond positively to such campaigns (Hornik, 2012). Instances of backfiring and boomerang effects are disturbingly common (e.g., Burgoon, Alvaro, Grandpre, & Voloudakis, 2002; Byrne & Hart, 2009; Lienemann, Siegel, & Crano, 2013). Rather than simply not improving their targeted populations’ problematic behaviors, campaigns have produced increased intention to use drugs (Hornik, Jacobsohn, Orwin, Piesse, & Kalton, 2008), less likelihood of seeking help for depression (Lienemann et al., 2013), increased weight gain among obesity patients (Young, Subramanian, & Hinnant, 2016), and increased smoking and drinking (Ringold, 2002) and drug use (Fishbein et al., 2002) among adolescents.

Even in the absence of boomerang effects, however, such campaigns can exacerbate the condition and status of the targeted populations. It is widely reported that people with the greatest need for adopting more positive behaviors are the least likely to hear or heed messages calling for those actions (Dutta-Bergman, 2004, 2005; Lienemann & Siegel, 2016; Noguchi, Albarracín, Durantini, & Glasman, 2007; Ramanadhan & Viswanath, 2006; Van’t Riet & Ruiter, 2013). The effectiveness of those messages among other people with *less* need to change has a largely unreported consequence, however; it serves to widen the gaps between those whose behaviors are deemed problematic and those whose are not, which presents a problem in and of itself (Dutta-Bergman, 2004, 2005).

Widening social and economic disparities are bad, not just for individuals at the lower end of the inequity equation, but for society as a whole (Ingraham, 2018; Wike,

2013). Increases in inequality have been associated with increases in corruption (Jongsung & Khagram, 2005), intolerance (Andersen & Fetner, 2008; Yang, 2015), and distrust in government and public institutions (Anderson & Singer, 2008). Furthermore, research suggests that increased social distance increases the likelihood and negative valence of stigmatizing stereotypes (Yang, 2015); and that presence of stigmatized and stereotyped perceptions can increase the likelihood of resistance to recommendations regarding healthful and pro-social behaviors (Hatzenbuehler, Phelan, & Link, 2013; Young et al., 2016).

Theory-based health promotion messaging

Sussing out the reasons for success or failure of public communication campaigns is a complicated undertaking. Although studies suggest theory-based communication campaigns perform better than those based on intuition or religious, moral, or political doctrines (Glanz & Bishop, 2010; Noar et al., 2007), not all public communication campaign messages are based on tested or even testable theories. A review of meta-analyses of campaign studies, and the prevalence of cases rejected from inclusion in those meta-analyses, suggest the percentage is quite low, in fact (Anker, Feeley, McCracken, & Lagoe, 2016; Glanz & Bishop, 2010; Michie & Abraham, 2004).

Directive advocacy: The theory of planned behavior. The current study tests the effects of a “standard” directive advocacy message strategy based on the theory of planned behavior (TPB), which has been widely used as a foundation for health-promotion message strategies and interventions in commercial as well as public health campaigns (Ajzen, 2012; Albarracin, Johnson, Fishbein, & Muellerleile, 2001; McEachan, Conner, Taylor, & Lawton, 2011).

According to Ajzen (2002), “human action is guided by three kinds of considerations” (p. 107): *behavioral beliefs*, which are the actor’s evaluations of the

expected rewards and/or consequences of engaging in the action; *normative beliefs*, the actor's assumptions about the evaluations of significant other people, weighted by the actor's desire to please or defy them; and *control beliefs*, the actor's beliefs about internal and external factors that would influence whether the action could be performed successfully. By identifying specific behavioral, normative, and control beliefs as important factors in the universe of influences on behavior, the TPB (Ajzen, 1991, 2012) provides a means for assessing predictive roles for those beliefs as well as a useful formula for creating persuasive strategies (McEachan et al., 2011; Sheppard, Hartwick, & Warshaw, 1988). Virtually all behavioral interventions include one or more of these factors (Ajzen, 2012).

A typical TPB-based advocacy message uses explicitly directive language to make the desired behavior clear while providing reasons why the desired behavior should or must be adopted. An example of this message-construction strategy is shown in Table 1, below.

[INSERT TABLE 1 ABOUT HERE]

Why directive advocacy can fail. Miller, Lane, Deatrck, Young, and Potts (2007) describe explicit exhortations such as detailed in Table 1 as “controlling language” (p. 222), and argue that, although such language can enhance persuasiveness, “psychological reactance theory predicts that the more directive and controlling a persuasive message is perceived to be, the more likely its position is to be rejected” (p. 223). The theory of psychological reactance (Brehm, 1989) is widely cited in describing conditions in which persuasive messages stimulate resistance rather than compliance (e.g., Burgoon, et al., 2002; Miller, Burgoon, Grandpre, & Alvaro, 2006; Ringold, 2002). The theory proposes that psychological reactance occurs in response to perceived threats to a subject's perception of personal autonomy or freedom and can lead to

responses such as “simply ignoring the persuasive attempt, derogating the source, and even producing even more of the undesired behaviors as a means of demonstrating choice or restoring attitudinal freedom” (Burgoon et al., 2002, p. 215). Ringold (2002) suggests that these kinds of resistance are most likely to occur among populations whose behaviors are most in need of change, i.e., those at greatest risk, who have also been described as those hardest to reach, whether because they have little access to or interest in receiving helpful messages and information (Dutta-Bergman, 2005), or they passively or actively avoid such information (Ramanadhan & Viswanath, 2006).

The influence of past behavior. Whether a campaign advocates for adoption of healthy behaviors or cessation of unhealthy ones, the strongly determinative influence of past behavior on future actions is an anchoring factor in many behavior-change efforts (Ajzen, 2002; Albarracín, Fishbein, & Middlestadt, 1998; Albarracín et al., 2001; Noriguchi, Albarracín, Durantini, & Glasman, 2007; Ouellette & Wood, 1998).

Ajzen (2002), noting a broad perception that “past behavior...is the best predictor of future behavior” (p. 107), reported that when measures of past behavior are added to the TPB predictor variables of attitude, subjective norms, and perceived behavioral control, the overall predictive quality of the predictive equation has been shown to increase. In a meta-analysis of studies of HIV-prevention interventions based on the TRA and TPB, Albarracín et al. (2001) found that behavioral intentions were correlated more strongly with past behavior than with future behavior. Albarracín et al. (1998) and Noriguchi et al. (2007) described similar findings.

If a past history of non-compliance with pro-social engagement advocacy messages predicts future non-compliance, while a past history of compliance predicts future compliance, this would explain at least part of society’s current problems with health disparities. It also suggests that a new pro-social advocacy campaign would be

likely to produce greater disparities between the previously compliant and non-compliant groups. This suggests the following hypotheses:

Past behavior will influence future behavior. Measures of pre-existing level of engagement in healthy behaviors are used in this study to represent subjects' past behavior. The research cited above suggests that subjects' past behavior will strongly influence their future behavior, as represented in the current study by a measure of subjects' expectations of performing specified pro-social behaviors (which will subsequently be referred to as *post-test engagement*). In following the assertions of Ajzen (2002), Ouellette and Wood (1998), and others that past behavior is a strong predictor of future behavior, it seems prudent to identify the subjects' pre-existing level of engagement in pro-social behaviors as a strong determinant of their post-test expectations of performing healthy behaviors:

H1: Pre-existing level of engagement will have a significant effect on post-test engagement, with much greater influence than message factors.

Past behavior will interact with persuasive efforts. Inferences drawn from the research cited above suggest there will be differences in how people respond to a typical pro-social advocacy message (represented in the current study by a message based on the TPB, as shown above in Table 1) depending on their pre-existing levels of pro-social engagement.

H2: Pre-existing level of engagement will moderate the effect of the TPB-based advocacy message on post-test engagement such that, compared to a non-persuasive control message, the TPB-based advocacy message will be less effective in promoting engagement in healthy behaviors among people with low pre-existing levels of such engagement than among people with higher pre-

existing levels of such engagement, resulting in greater disparities in engagement in healthy behaviors between those groups.

Method

Data for this study were collected using an online survey and Amazon's Mechanical Turk (AMT) virtual workforce. The survey instrument, created on the Qualtrics platform, was designed to compare responses to engagement-promoting messages across three different domains (political/civic affairs, personal health, and work). The study and survey instrument were approved for human subjects research by the University at Albany Institutional Review Board (IRB Protocol Number 16-X-289-01) on July 19, 2016. The current study focuses on data obtained from 250 participants randomly assigned to the health domain.

Participants. Consistent with other studies of the AMT workforce (Hitlin, 2016; Mason & Suri, 2012), the sample was 58.8% female ($n = 147$), 41.2% male ($n = 103$), 70.0% White ($n = 175$), 30.0% Non-White ($n = 75$), with an average age of 35.4 years (median age = 33; range: 18 to 69). Subjects were fairly well-educated, with self-reports indicating 80 (32.0%) had attended but did not graduate from college, 104 (41.6%) had graduated college, and an additional 45 (18%) had at least one year of post-graduate study. Just 21 (8.4%) had no more than a high school education. Income levels were modest, with 62 (24.8%) reporting annual household incomes of less than \$30,000; 85 (34.0%) reporting incomes between \$30,000 and \$60,000; 78 (31.2%) reporting incomes from \$60,001 to \$99,999; and 25 (10.0%) reporting incomes over \$100,000.

Procedure. The study design featured assessment of pre-existing level of engagement in healthy behaviors, then random assignment to either a TPB-based advocacy message or a non-persuasive control message condition, after which

participants' post-test likelihood of enacting a set of healthy behaviors was assessed.

Table 2 presents a comparison of the message conditions.

[TABLE 2 NEAR HERE]

Measures: *Pre-existing level of engagement (PEX) groupings.* Participants were identified as *Low*, *Mid*, or *High* in their levels of pre-existing engagement in healthy behaviors through scores based on their level of agreement, on a scale of one (lowest) to seven (highest), with four statements relating to the model of health engagement suggested by Carman et al. (2013), Clancy (2011), and Hibbard et al. (2013): *I regularly seek information about healthy behaviors. I am conscientious about health-related behaviors like diet, exercise, and following the directions of my health care providers. I am actively involved in a self-directed diet and/or exercise program or therapeutic program recommended by my health care providers. I often talk about ways to improve my health with my health care providers.* Responses were averaged to form a composite measure of pre-existing engagement ($M = 4.76$; $SD = 1.26$; Cronbach's $\alpha = .793$). Cut points for the 33.3 and 66.7 percentiles were 4.25 and 5.50, respectively, which yielded the following group sizes: *Low*, 85; *Mid*, 77; *High*, 88.

Post-Test Engagement. After exposure to the message manipulation, participants were asked to rate, on scales ranging from one to seven, their likelihood of engaging, likely frequency of engaging, and likelihood of increasing engagement in three health-related behaviors that paralleled the highlighted behaviors presented in conjunction with the persuasive message, e.g., *I will learn more [increase the amount of time I spend learning] about using resources that can help improve my health. I will make an effort [increase my efforts] to improve my health by starting a diet or exercise plan, going to therapy, or otherwise changing my behavior. I will talk [increase the amount of time I spend talking] about health-related matters with my health care*

providers. Scores of the nine items were averaged to form a composite measure of post-test engagement ($M = 4.65$; $SD = 1.23$; Cronbach's Alpha = .911).

Results

Factorial analysis of variance (ANOVA) is the commonly used statistical method for testing effects of categorical independent variables when the dependent variable is continuous (Hayes, 2005). The hypotheses presented above were tested using a 2 x 3 factorial ANOVA test with Post-Test Engagement as the continuous, random, dependent variable, and Message (2 levels: TPB-based, Control), and PEX group (3 levels: *Low*, *Mid*, *High*) as the categorical independent variables. Means and standard deviations of post-test engagement from this analysis are presented in Table 3, below. The ANOVA summary detailing the effects of these variables is presented in Table 4.

[TABLE 3 NEAR HERE]

[TABLE 4 NEAR HERE]

Examination of Levene's test of equality of error variances showed a violation of the assumption of homogeneity of variances, $F(5, 244) = 3.62, p = .004$, but assumptions of independence, normality, and linearity had been met so the analysis was considered reliable.¹ There was a significant main effect of pre-existing level of engagement (i.e., PEX group), $F(1, 244) = 74.23, p > .001$, accounting for 37.8% of the variance of post-test engagement, based on a partial eta squared value of .378. The analysis did not identify any main effects of message type, $F(1, 244) = 1.12, p = .292$. The comparison of main effects supports H1, providing confirmation that pre-existing

¹ The Levene statistic tests the null hypothesis that variance is equal across all groups in the analysis. A significant finding (i.e., of $p < .05$) indicates that variance is not equal across the groups (Field, 2009), a condition that can increase the chance of Type 1 error (Tabachnick & Fidell, 2007). Review of the *SDs* in Table 3 suggests the violation reflects the differences in variance between the *Low*, *Mid*, and *High* PEX groups, with the *Low* group exhibiting markedly greater *SDs* than the *High* group.

level of engagement had a more significant influence on post-test engagement than message factors.

With critical relevance to H2, the analysis identified a significant interaction effect between PEX group and message type, $F(2, 244) = 3.30, p = .038$, accounting for 2.6% of the variance in post-test engagement. A graphic plot of this interaction is shown in Figure 1.

[FIGURE 1 NEAR HERE]

As shown in Figure 1, disparities in post-test engagement between the *Low* and higher PEX groups are visibly greater among participants who received the TPB-based message than those who received the control message, i.e., $TPB_H - TPB_L > CTRL_H - CTRL_L$, and $TPB_M - TPB_L > CTRL_M - CTRL_L$.² The significance of these greater disparities was confirmed through *t*-test comparisons of the differences in post-test engagement between the *Low* PEX group and the higher PEX groups receiving the TPB and Control messages (from Table 3, above). The mean difference in post-test engagement between the *High* and *Low* PEX groups receiving the TPB-based message was 0.75 ($SE = 0.16$) greater than the mean difference between the *High* and *Low* groups receiving the control message, $t(161) = 4.61, p < .001$ (one-tailed), 95% CI = 0.43 to 1.07. The mean difference between the *Mid* and *Low* PEX groups receiving the TPB-based message was 0.51 ($SE = 0.16$) greater than the mean difference between the

² Notation: TPB = post-test engagement produced by TPB-based messages. CTRL = post-test engagement produced by non-persuasive control messages. Subscripts are used to differentiate between PEX group levels (i.e., _L = *Low* PEX group, _M = *Mid* PEX group, _H = *High* PEX group).

Mid and *Low* groups receiving the control message, $t(160) = 3.14, p = .001$ (one-tailed), 95% CI = 0.19 to 0.83. H2 is supported.

Discussion

The current study grew out of suspicions that efforts to address issues of problematic disengagement may often sustain or even exacerbate disparities in positive engagement. The study provides evidence that pre-existing level of engagement can moderate response to directive pro-engagement advocacy messages (as represented by the TPB-based message) to the effect that such messages are, to paraphrase Ringold (2002), Dutta-Bergman (2004, 2005) and others, most effective with those who need them least, and least effective with those whose behaviors most need to change. The results were greater disparities between the *Low* PEX group (analogous to society's problematically disengaged "have nots"), and the higher PEX groups (representing society's "haves").

Exacerbation of engagement disparities and inequality. If the TPB-based message represented a real-world campaign intended to address issues of problematic disengagement with a real-world population, the results would have represented a net if negligible gain in positive engagement among that population. This corresponds with the real-world results reported by Snyder (2007) and others, in which pro-social advocacy campaigns lead to modestly positive results.

However, despite net positive effects across the total sample, these positive results were confined to the groups that were already somewhat positively engaged in healthy behaviors. The pro-social advocacy message in the current study produced no positive effects among the group lowest in pre-existing level of engagement in healthy behaviors. The net result was increased disparities in positive engagement between the groups. Real-world campaigns that produce results like this exacerbate disparities, and

disparities are problematic in and of themselves. Not only do such increased disparities reinforce problems with stereotyping and stigmatization that can paralyze the targeted populations, the lack of response from the “have not” populations can reinforce societal assumptions about individual responsibility, leading to increased prevalence of “blame the victim” attitudes (Campo & Mastin, 2007; Thompson & Kumar, 2011), which can suppress allocation of resources for social programs, causing them to be derogated as “handouts for the undeserving.”

Causal inferences for persistence of disparities. For a designer of persuasive messages, it is humbling to report that, with regard to the population of greatest interest in this study—those deemed most in need of greater engagement, as represented by the *Low* PEX group—the persuasive advocacy message had *no discernable influence* on Post-Test Engagement. With the *Low* group, the effects of the TPB-based persuasive message were indistinguishable from those of the non-persuasive control message.

The current study tested the effects of a theory-based persuasive message, but in a practical sense the message did not do anything to change the situations facing the study’s participants. As some social scientists might suggest, it would be folly to expect to change a person’s behavior without changing that person’s situation (Ross & Nisbett, 1991). Merely addressing the TPB-related element of perceived behavioral control (PBC) with a few words does little to offset the anchoring effects of past behavior (e.g., Ouellette & Wood, 1998), which may be heavily influenced by socio-economic status.

The directive nature of the TPB-based persuasive message has been noted as a possible stimulus for reactance (Miller et al., 2007). A rebellious boomerang effect (i.e., doing the opposite) among the *Low* PEX group would not be necessary for sustenance or exacerbation of disparities in engagement with the more healthily engaged groups. Reactance effects of simply ignoring the message (i.e., simple non-compliance) or a

slow-walked response (i.e., minimal compliance) would also produce greater disparities compared to groups that were actively complying with the messages. The directive nature of the persuasive message could also have divergent effects on cultural groups with differing norms of power distance, individualism and autonomy (Fitch, 1994; Hofstede, 2011). People from highly individualistic cultures might respond well to suggestions that could improve their personal situations, while people with little belief in their ability to change their personal situations might not be strongly moved by messages suggesting they try to do so.

Study limitations and implications for future research. Although the current study identified resistance to persuasive messages, it was not designed to explore possible reasons for that resistance. Reactance (Brehm, 1989; Dillard & Shen, 2005; Hong & Faedda, 1996) and stigmatization (Link & Phelan, 2006; Mackert, Mabry, Hubbard, Grahovac, & Steiker, 2014) have each been proposed and measured as moderating factors in pro-social message effectiveness. Van't Riet and Ruiter (2013) suggest four other defensive strategies that could play a role in blocking or blunting the effectiveness of pro-social advocacy campaigns: *avoidance*, *denial*, *cognitive reappraisal*, and *suppression*. Additional potentially moderating factors for which measures could be developed might include inertia, fear, argument scrutiny (Moyer-Gusé, 2008), and source derogation (Burgoon et al., 2002). Any or all of these factors may have played a role in producing the results found in the current study and could play a useful role in a future study.

Conclusion. Most commercial persuasion efforts focus on marketing to people who are most likely to buy (Arens & Weigold, 2018). The current study suggests that even when that is not the intention, such as in public health campaigns, it may be the effect. Even when aimed at people most in need of change, such messages may be more

likely to impact people who are least in need of change. After all, each of us has been hearing admonitions to behave better since infancy, and yet we behave the way we do. It is small wonder that words-only behavior-change efforts such as “Just say no” campaigns have so often failed to produce positive results (Fishbein et al., 2002). The current study suggests that if the goal is to create positive change in populations who are most at risk, words alone will probably not be enough.

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Tables and Figure for “How Public Health Campaigns Promote Public Health Disparities”

Table 1

TPB-based directive advocacy message

Advocated behaviors	
Three ways to improve the quality of your health.	
1. Learn more. Learn more about resources that can protect and improve your health.	
2. Live healthier. Eat healthy foods, get regular exercise, and follow your health care providers' directions for prescribed medications, screenings, and treatment.	
3. Talk to your doctor. Talk to your health care providers about how you're feeling and how to live a healthier life.	
Components of TPB message	<i>TPB function/factor (not shown to participants)</i>
Here's why you should do them:	<i>Explicit direction</i>
You can help bring about significant improvements in your health.	<i>Behavioral and control beliefs</i>
By taking positive actions, your life and health will be improved.	<i>Behavioral beliefs</i>
Your health care providers and your family members will appreciate your efforts.	<i>Normative beliefs</i>
And the actions are well within your capabilities.	<i>Control beliefs</i>
Do them!	<i>Explicit direction</i>

Table 2

Side-by-side comparison of message conditions

TPB-based directive advocacy message (Persuasive)	Control message (Non-Persuasive)
<p>Three ways to improve the quality of your health.</p> <ol style="list-style-type: none"> 1. Learn more. Learn more about resources that can protect and improve your health. 2. Live healthier. Eat healthy foods, get regular exercise, and follow your health care providers' directions for prescribed medications, screenings, and treatment. 3. Talk to your doctor. Talk to your health care providers about how you're feeling and how to live a healthier life. <p>Here's why you should do them</p> <p>You can help bring about significant improvements in your health.</p> <p>By taking positive actions like these, your life and health will be improved.</p> <p>Your health care providers and your family members will appreciate your efforts.</p> <p>And these actions are well within your capabilities.</p> <p>Do Them!</p>	<p>Health related activities</p> <p>Many schools from the elementary level through college include health as a required part of the educational curriculum.</p> <p>Students in elementary school health classes usually learn the basics of hygiene. Students in college can study public health issues or even pre-med courses.</p> <ol style="list-style-type: none"> 1. Elementary health. The basics of hygiene and safety. 2. High school health. Focus often on nutrition and sex education. 3. College health. Issues for future health care providers and administrators.

Table 3

Means and Standard Deviations for Post-Test Engagement by PEX Group and Message Type

PEX Group	Message	Mean	SD	N
<i>Low</i>	TPB-based message	3.56	1.31	41
	Control message	3.85	1.02	44
<i>Mid</i>	TPB-based message	4.83	0.94	35
	Control message	4.61	0.88	42
<i>High</i>	TPB-based message	5.74	0.74	42
	Control message	5.28	0.86	46

Table 4

ANOVA: Post-Test Engagement by PEX Group and Message Type

Source	SS	df	MS	F	Sig.	Effect Size [§]
PEX Group	140.10	2	70.05	74.23	.000***	.378
Message Type	1.05	1	1.05	1.12	.292	.005
PEX Group x Message Type	6.24	2	3.12	3.30	.038*	.026
Error	230.26	244	0.94			
Total	375.42	249				

* $p < .05$, ** $p < .01$, *** $p < .001$; § Partial Eta Squared

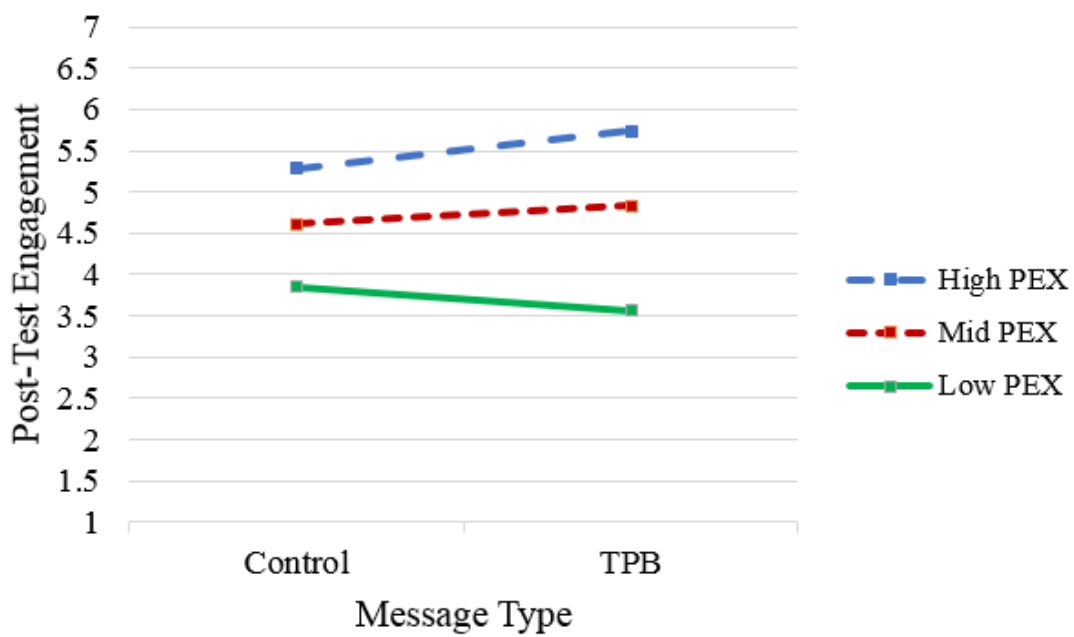


Figure 1. Plot of means of post-test engagement of *Low, Mid* and *High* PEX groups by message type.